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# NOTES ON *BRACONIDAE* OF JAPAN

## III. *APANTELES*

By

CHIHISA WATANABE

(With 6 Textfigures and Plate II)

*Apanteles*, one of the most economically important and well-known group of the *Braconidae*, forms a genus of enormous extent, containing nearly 600 species. Notwithstanding the above mentioned fact about only 20 species of it have been recorded in Japan, and even some of them already have sunken as synonyms. So far as my investigations go, I have 29 species and 1 form at my disposal. These species and synonyms are as follows:

- |  |                                     |
|--|-------------------------------------|
| 1. <i>Apanteles ruficornis</i> HALIDAY     | 12. <i>A. okamotoi</i> nov. nom.    |
| = <i>A. antipoda</i> ASHMEAD               | = <i>A. smerinthis</i> OKAMOTO      |
| = <i>A. narangae</i> VIERECK               | (non RIELY)                         |
| 2. <i>A.* congestus</i> NEES               | 13. <i>A.* gastropachae</i> BOUCHÉ  |
| 3. <i>A. ordinarius</i> RATZEBURG          | 14. <i>A.* affinis</i> NEES         |
| = <i>A. dendrolimi</i> MATSUMURA           | 15. <i>A. femoratus</i> ASHMEAD     |
| 4. <i>A.* zygaenarum</i> MARSHALL          | 16. <i>A. bicolor</i> NEES          |
| 5. <i>A. glomeratus</i> LINNÉ              | 17. <i>A. liparidis</i> BOUCHÉ      |
| = <i>A. aporiae</i> MATSUMURA              | = <i>A. japonicus</i> ASHMEAD       |
| 6. <i>A. suzumiei</i> nov. sp.             | = <i>A. posticae</i> SONAN          |
| 7. <i>A. tatehae</i> nov. sp.              | 18. <i>A.* fulvipes</i> HALIDAY     |
| 8. <i>A. taprobanae</i> CAMERON            | 19. <i>A.* lamborini</i> WILKINSON  |
| = <i>A. formosae</i> VIERECK               | 20. <i>A. sasakii</i> nov. sp.      |
| 9. <i>A. flavipes</i> CAMERON              | 21. <i>A.* fasciatus</i> NEES       |
| = <i>A. nonagriæ</i> VIERECK               | 22. <i>A. kuwayamai</i> nov. sp.    |
| = <i>A. simplicis</i> VIERECK              | 23. <i>A. sugae</i> nov. sp.        |
| = <i>A. flavatus</i> ISHIDA                | 24. <i>A. hamakii</i> nov. sp.      |
| 9.a. <i>A. flavipes</i> CAMERON            | 25. <i>A. lacteicolor</i> VIERECK   |
| f. <i>chilonis</i> MUNAKATA                | = <i>A. conspersae</i> FISKE        |
| = <i>A. chilonis</i> MUNAKATA              | 26. <i>A. sonani</i> nov. sp.       |
| = <i>A. chilocida</i> VIERECK              | 27. <i>A. igae</i> nov. sp.         |
| 10. <i>A. planus</i> nov. sp.              | 28. <i>A.* heterusiae</i> WILKINSON |
| 11. <i>A. miyoshii</i> nov. nom.           | 29. <i>A. asotae</i> nov. sp.       |
| = <i>A. smerinthis</i> MIYOSHI (non RIELY) |                                     |

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\* This species is the first record to the *Braconid*-fauna of Japan.

Further the species identified by some authors as *Apanteles fulvipes* HALIDAY, a well-known parasite of *Lymantria dispar* L. and *Dendrolimus spectabilis* BUTL., which was introduced into U. S. A., is truly *Apanteles liparidis* BOUCHÉ.

In working with our species, it seems to me rather unworthy to divide them into smaller groups, and so I follow MUESEBECK (Proc. U. S. Nat. Mus., lviii, pp. 483-576, 1920) in disregarding the generic names proposed by ASHMEAD and VIERECK. Most of these species are gregarious, and some of them are rarely solitary, being mostly the natural enemies of *Lepidoptera*, and the cocoons made by these larvae are particularly interesting and often of a great assistance in determining the species.

All the specimens dealt with in this paper are preserved in the Entomological Museum, Hokkaido Imperial University at Sapporo.

Before going further I wish to acknowledge my indebtendness to Prof. S. MATSUMURA for his kind direction. My gratitude is also due to Dr. T. ISHII and Dr. S. KUWAYAMA for their kindness in lending literatures and in giving some material. Further I wish to express my sincere thanks to Messrs. K. IGARASHI, I. HAYASHI, S. KARIYA, H. KÔNO, K. OSHIMA, S. SASAKI, J. SONAN, N. TAKAHASHI, M. TAKIZAWA, and H. YAKU, who kindly sent material for my present use.

### Subfamily *Microgasterinae*

#### Genus *Apanteles* FÖRESTER

*Apanteles* FÖRESTER, Verh. naturh. Ver. preuss. Rheinl., xix, p. 245 (1862); REINHARD, Deutsch. ent. Zeitschr. xxiv, p. 361 (1880); MARSHALL, Trans. Ent. Soc. London, p. 155 (1885); id., Spec. Hymén. Europe, IV, p. 401 (1889); DALLA TORRE, Cat. Hymen., IV, p. 162 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 105 (1904); LYLE, Entomologist, xlix, p. 123 (1916); MUESEBECK, Proc. U. S. Nat. Mus., lviii, p. 485 (1920); id., l. c. lxi, p. 15 (1922); WILKINSON, Bull. Ent. Res., xix, p. 79 (1928).

*Cotesia* CAMERON, Men. Manch. Phil. Soc., iv, p. 185 (1891).

*Microgaster* (*Apanteles*) THOMSON, Opusc. ent., p. 2252 (1895).

*Pseudapanteles* ASHMEAD, Proc. Ent. Soc. Washing., iv, p. 166 (1897).

*Protanteles* ASHMEAD, Proc. Ent. Soc. Washing., iv, p. 166 (1897).

*Urogaster* ASHMEAD, Proc. Ent. Soc. Washing., iv, p. 166 (1897).

*Parapanteles* ASHMEAD, Proc. U. S. Nat. Mus., xxiii, p. 131 (1900).

*Glyptapanteles* ASHMEAD, Proc. U. S. Nat. Mus., xxviii, p. 147 (1904).

*Cryptapanteles* VIERECK, Proc. Ent. Soc. Washing., xi, p. 209 (1909).

*Apanteles* (*Doichogenidea*) VIERECK, Proc. U. S. Nat. Mus., xl, p. 173 (1911).

*Stenopleura* VIERECK, Proc. U. S. Nat. Mus., xl, p. 187 (1911).

Genotype:—*Apanteles obscura* NEES

## Key to the Species

1. Propodeum with no areola, often with a median longitudinal carina; 2nd tergite as long as or a little shorter than the 3rd; ovipositor short. ... 2
- Propodeum with areola as a rule, but often obscurely marked, and occasionally with no areola; 2nd tergite short, transverse, mostly much shorter than the 3rd. ... 22
2. First tergite at the apex as broad as or broader than at the base. ... 3
- First tergite not broader at the apex than at the base, usually narrower. ... 17
3. Hind coxae reticulate-rugose. ... 4
- Hind coxae smooth and shining or punctate. ... 6
4. Scutellum strongly punctate; coxae reddish yellow, the hind pair fuscous at the bases; tergite 2-4. sometimes blackish red. 2 mm. ... 1. *ruficrus* HAL.
- Scutellum smooth with some scattered punctures; all coxae black. ... 5
5. Hind tibial spurs shorter than  $\frac{1}{2}$  of the metatarsus; 1st tergite at the apex broader than at the base, as long as broad at the apex. 2.5-3 mm. ... 2. *congestus* NEES
- Hind tibial spurs longer than  $\frac{1}{2}$  of the metatarsus; 1st tergite at the apex as broad as at the base,  $1\frac{1}{2}$  times longer than broad. 3.5-4 mm. ... 3. *ordinarius* RATZ.
6. Hind femora black; wings whitish hyaline; propodeum rugose with a longitudinal median carina; hind tibial spurs shorter than  $\frac{1}{2}$  of the metatarsus. 2.5 mm. ... 4. *zygaenarum* MARSH.
- Hind femora reddish yellow, often tipped with fuscous. ... 7
7. Second tergite with two oblique impressed lines; hind coxae black. ... 8
- Second tergite with no oblique impressed line; hind coxae reddish yellow or black. ... 10
8. Trochanters reddish yellow; propodeum with a weak median longitudinal carina. (Cocoon sulphur-yellow) 3 mm. ... 5. *glomeratus* L.
- Trochanters not wholly reddish yellow, at least the upper ones black or fuscous. ... 9
9. Belly mostly black; hind femora fuscous on each end; tergites 2-6. shallowly grooved longitudinally at the middle. (Cocoon white, tinged with flesh-colour and with no web) 2.5 mm. ... 6. *suzumei* nov. sp.
- Belly broadly reddish yellow; hind femora with a fuscous spot at the base; tergites not grooved as in the preceding. (Cocoon white, enveloped within a cottony ball). 2.5 mm. ... 7. *tatehae* nov. sp.
10. Propodeum with distinct basal transverse carinae. 2.5 mm. ... 8. *laprobanae* CAM.
- Propodeum with no transverse basal carina. ... 11
11. Propodeum with no longitudinal median carina; antennae of the female submoniliform. ... 12
- Propodeum with a longitudinal median carina; antennae of both sexes filiform. ... 13
12. Hind coxae reddish yellow. 2.5 mm. ... 9. *flavipes* CAM.
- Hind coxae black. 2.5 mm. ... 9a f. *chilonis* MUNAK.
13. Propodeum with a short longitudinal median carina at the apex, sending two oblique carinae on each side; coxae reddish yellow, the hind pair fuscous at the base. 2.5 mm. ... 10. *planus* nov. sp.
- Propodeum with a longitudinal median carina from the base to the apex. ... 14
14. Abdomen yellowish red, the 1st and some apical tergites fuscous. ... 15
- Abdomen black, edged with yellow at the sides of the basal three tergites. ... 16
15. First tergite (Fig. 2, a) broader at the apex than at the base, with the sides rounded; 3rd tergite at the base rugose. 3-3.5 mm. ... 11. *niyoshii* nov. nom.
- First tergite (Fig. 2, b) a little broader at the apex than at the base, with the sides hardly parallel; 3rd tergite smooth. 3 mm. ... 12. *okamotoi* nov. nom.
16. Mesonotum strongly punctate throughout; four anterior coxae fuscous, not black; 2nd tergite a little shorter than the 3rd, the latter often rugose at the base. 2.5 mm. ...

- ... .. 13. *gastropachae* BOUCHÉ
- Mesonotum smooth and shining with weak punctures anteriorly; 2nd tergite as long as about  $\frac{2}{3}$  length of the 3rd. 2.5 mm. ... .. 14. *offinis* NEES
17. Propodeum with an indistinct areola; 1st abscissa of the radius (Fig. 5) distinctly shorter than the intercubital nervure. ... .. 22. *kuwayamai* nov. sp.
- Propodeum with no areola; 1st abscissa of the radius not shorter than the intercubital nervure. ... .. 18
18. Hind femora and hind tibiae black; 1st abscissa of the radius not angled with the intercubital nervure; 1st tergite (Fig. 3, a) twice as long as broad at the base... .. 15. *femoratus* ASHM.
- Hind femora and hind tibiae reddish yellow, often tipped with fuscous. ... .. 19
19. All coxae and two basal tergites reddish yellow; 1st tergite twice as long as broad at the base. 2.5 mm. ... .. 16. *bicolor* NEES
- Hind coxae and abdomen black, abdomen edged with yellow at the sides of some basal tergites; 1st tergite thrice as long as broad at the base. ... .. 20
20. First tergite (Fig. 3, b) gradually narrowed from the base to the apex. ... .. 21
- First tergite (Fig. 3, c) narrowed from the apical third to the apex, with the sides of the basal two-thirds parallel; propodeum and basal two tergites with few scattered punctures. 3 mm. ... .. 17. *liparitis* BOUCHÉ
21. Propodeum and two basal tergites finely striate-rugose; impressed lines on the 2nd tergites straight throughout; two basal tergites narrowly margined with yellow. 3 mm. ... .. 18. *fulvipes* HAL.
- Propodeum and two basal tergites with few punctures; impressed lines on the 2nd tergite towards the apex curved downwards and almost parallel; two basal tergites broadly margined with reddish yellow; 3rd almost reddish yellow. 3 mm. ... .. 19. *lamborini* WILKN.
22. Propodeum with no areola. ... .. 23
- Propodeum with areola. ... .. 24
23. Propodeum with a median longitudinal carina; hind femora widely fuscous; ovipositor-sheaths as long as the hind metatarsus. 2.5 mm. ... .. 20. *sasakii* nov. sp.
- Propodeum with no median longitudinal carina; hind femora brownish red with a black line above; ovipositor as long as the hind tibiae. 4 mm. ... .. 21. *falcatus* NEES
24. Propodeum with no costula; areola weakly defined. ... .. 25
- Propodeum with costulae; areola strongly marked. ... .. 27
25. First tergite at the base broader than at the apex; 2nd tergite a little shorter than the 3rd, with two impressed oblique lines; 1st abscissa of the radius (Fig. 5) distinctly shorter than the intercubital nervure; ovipositor-sheaths as long as the hind metatarsus. 1.8-2 mm. ... .. 22. *kuwayamai* nov. sp.
- First tergite at the base not broader than at the apex; 2nd tergite much shorter than the 3rd; 1st abscissa of the radius not shorter than the intercubital nervure; ovipositor-sheaths about as long as the hind tarsus. 2.5 mm. ... .. 26
26. Stigma brownish yellow with a pale spot at the inner angle; hind coxae brown, being fuscous at the bases; belly and lateral margins of the basal three tergites reddish yellow. ... .. 23. *sugae* nov. sp.
- Stigma brownish yellow with a pale spot on each angle; hind coxae black; abdomen black, only the belly at the base fuscous. ... .. 24. *hamakii* nov. sp.
27. Hind femora black or fuscous, sometimes tipped with brown. ... .. 28
- Hind femora reddish yellow, tipped with fuscous. ... .. 29
28. Hind femora black; wings milky, subhyaline; 2nd tergite rugose; ovipositor longer, the sheaths a little shorter than the hind tibiae. 2.5 mm. ... .. 25. *lacticolor* VIERECK
- Hind femora fuscous, on the apical third brown; 2nd tergite smooth and shining; ovipositor

- shorter, the sheaths as long as the hind metatarsus. 2.5 mm. ... 26. *sonani* nov. sp.
29. Hind coxae reticulate-rugose; all coxae not black, the four anterior brownish yellow, the hind pair fuscous; ovipositor longer, the sheaths as long as the hind tarsus; hind tibial spurs nearly equal to  $\frac{1}{2}$  of the metatarsus. 2.5 mm. ... 27. *igae* nov. sp.
- Hind coxae smooth with some scattered punctures; ovipositor shorter; hind tibial spurs shorter than  $\frac{1}{2}$  of the metatarsus. ... 30
30. Abdomen wholly black; ovipositor longer, the sheaths a little shorter than the hind femora. 2.5 mm. ... 28. *heterusiae* WILKN.
- Belly reddish yellow; basal three tergites edged with reddish yellow on the lateral margins; ovipositor shorter, the sheaths as long as  $\frac{1}{2}$  of the hind metatarsus. 2.5 mm. ... 29. *asotae* nov. sp.

### 1. *Apanteles ruficrus* HALIDAY

*Microgaster ruficrus* HALIDAY, Ent. Magaz., II, p. 253, ♀ ♂ (1834).

*Apanteles ruficrus* REINHARD, Deutsch. ent. Zeitschr., xxiv, p. 363 & 368, ♀ ♂ (1880); MARSHALL, Trans. Ent. Soc. London, p. 166, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 410, ♀ ♂ (1889); DALLA TORRE, Cat. Hymén., IV, p. 181 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 108 (1904); LYLE, Entomologist, xlix, p. 161 (1916); GAHAN, Bull. Ent. Res., xix, p. 256 (1928); WILKINSON, Bull. Ent. Res., xx, p. 108, ♀ ♂ (1929).

*Apanteles antipoda* ASHMEAD, Proc. Linn. Soc. N. S. Wales, xxv, p. 355 (1900); WILKINSON, Bull. Ent. Res., xix, p. 95, ♀ ♂ (1928).

*Apanteles manilae* ASHMEAD, J. N. Y. Ent. Soc., xii, p. 19 (1904) (nec. *Glyptapanteles manilae* ASHM. 1905).

*Apanteles sydneyensis* CAMERON, Proc. Linn. Soc. N. S. Wales, xxxvi, p. 342 (1911).

*Apanteles (Protapanteles) narangae* VIERECK, Proc. U. S. Nat. Mus., xlv, p. 642, ♀ ♂ (1913).

This is one of the most widely distributed species; *Apanteles antipoda* ASHM., *Apanteles sydneyensis* CAM., *Apanteles manilae* ASHM. and *Apanteles narangae* VIERECK, all recorded from the Indo-Australian region, have been already stated by WILKINSON as synonyms.

Host—*Naranga aenescens* MOORE

More than ten of its host-species have been recorded from Europe and the Indo-Australian region. According to VIERECK it is a parasite of *Naranga aenescens* MOORE in Formosa, and the *Braconid* parasite of the same host, described by U. NAWA,<sup>(1)</sup> K. ONUKI,<sup>(2)</sup> and etc., is certainly of this species.

I have specimens which were bred from the same host by Mr. J. SONAN at Taihoku in Formosa, on the 20th of May, 1929, and by Mr. T. ISHII at Atsuki in Honshu, on the 7th of September, 1932. I also received this specimens from Mr. H. KURODA at Nagasaki, Mr. S. KARIYA at Gifu, and Mr. N. TAKAHASHI at Niigata.

Cocoon—Yellowish white, gregarious, clustered together with no external covering. It is found attached to the leaves of the rice-plant.

1) Tsuzoku Ekichu Shuran Setsumeisho, I, p. 1, Fig. 2 (1901).

2) Jitsuyo Konchugaku, p. 254, Fig. 176 (1903).

Loc. Distr.—Honshu, Kiushu, Formosa.

Gen. Distr.—Europe, Japan, Formosa, Ceylon, India, Australia.

Japanese Name: *Ineyoto-samuraikomayu*.

## 2. *Apanteles congestus* NEES

*Microgaster congestus* NEES, Hymen. Ichneum. affin. Monogr., II, p. 405 (1834).

*Apanteles congestus* REINHARD, Deutsch. ent. Zeitschr., xxiv, p. 363 & 369, ♀ ♂ (1880); MARSHALL, Trans. Ent. Soc. London, p. 169, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 412, ♀ ♂ (1889); SZÉPLIGETI, Termesz. Füzet. xix, p. 374 (1896); DALLA TORRE, Cat. Hymen., IV, p. 166 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 106 (1904); LYLE, Entomologist, xlix, p. 163, Fig. 7 (1916).

*Apanteles mamestrae* MATS. (nec. ASHMEAD) (MATSUMURA, Nippon-ekichu-mokuroku, p. 100, 1908) may be the same species.

Host—*Barathra brassicae* L., *Rhyacia c-nigrum* L., *Phytometra ornatissima* Wk.

About fifty host-species are known in Europe belonging mostly to *Noctuidae*. I have many specimens which were bred from the larva of *Barathra brassicae* L. by Dr. S. KUWAYAMA at Sapporo in August, 1922, of *Rhyacia c-nigrum* L. by Mr. K. OSHIMA in August, 1929 at Sapporo, and of *Phytometra ornatissima* Wk. by the writer at Sapporo, on the 10th of August, 1932.

Cocoon (Pl. II, Fig. 5)—Thin, white, placed side by side in a cake, arranged almost regularly, the cake being covered by a thin white web and enveloped in a woolly ball of oval shape, and of yellowish colour. These balls are often found attached to the stems of the flax.

Loc. Distr.—Hokkaido.

Gen. Distr.—Europe, Japan.

J. N.: *Yoto-samuraikomayu*.

## 3. *Apanteles ordinarius* RATZBURG

*Microgaster ordinarius* RATZBURG, Ichneum. d. Forstinsect., I, p. 71 (1844), II, p. 52 (1848), III, p. 54, ♀ ♂ (1852).

*Apanteles ordinarius* REINHARD, Deutsch. ent. Zeitschr., xxiv, p. 363 & 368, ♀ ♂ (1880); MARSHALL, Trans. Ent. Soc. London, p. 168, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 411, ♀ ♂ (1889); DALLA TORRE, Cat. Hymen., IV, p. 179 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 108 (1904).

*Apanteles* sp. TABATA, Karafuto Matsu-kemushi ni kansuru Chosa Sho, (Publication of Govern. Saghalien), p. 103, ♀ ♂ with Fig. (1924).

*Apanteles dendrolimi* MATSUMURA, Ann. Mus. Zool. Ac. Sc. Russ., xxxv, p. 40, ♀ ♂ (1925).

*Apanteles dendrolimusi* MATSUMURA, Jour. Coll. Agric., Hokkaido Imp. Univ., xviii, I, p. 32, ♀ ♂, Pl. IV, Fig. 16 (1926).

Host—*Dendrolimus albolineatus* MATS., *Dendrolimus spectabilis* BUTL.

According to RATZBURG it is one of the most important parasite against the caterpillar of *Dendrolimus pini* L. in Europe. It is recorded by Dr. S. MATSUMURA and T. TABATA as a parasite of the larva of *Dendrolimus albolini*.

*neatus* MATS. in Saghalien, Kuriles and Hokkaido. A large number of this specimen is preserved in this Museum bred from the same host, and it was reared also from the larva of *Dendrolimus spectabilis* BUTL., on the 20th of August, 1922, at Sapporo.

Cocoon (Pl. II, Fig. 3) —White, gregarious, cemented together in a long slender row, surrounded by some loose silk, and placed on the leaves and twigs of the pine-tree. The dead host-larva is found often attached to the mass of the cocoon.

Loc. Distr.—Saghalien, Kuriles, Hokkaido.

Gen. Distr.—Europe, Japan.

J. N.: *Karafuto-matsu-samuraikomayu*.

#### 4. *Apanteles zygaenarum* MARSHALL

*Apanteles zygaenarum* MARSHALL, Trans. Ent. Soc. London, p. 181, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 428, ♀ ♂ (1889); DALLA TORRE, Cat. Hymen., IV, p. 186 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 109 (1904); LYLE, Entomologist, xlix, p. 231, Fig. 3 (1916).

Host—*Colias hyale* L.

According to MARSHALL this is a parasite of some *Zygaenid*-, *Melitaeid*- and *Lycaenid*-larvae in Europe. It was bred from the larva of *Colias hyale* L., on the 10th of September, 1929 at our college-insectarium.

Cocoon—Sulphur-yellow, paler than that of *A. glomeratus* L., clustered irregularly, surrounded by some loose silk. It is often found attached to the leaves of the soy-bean and clover.

Loc. Distr.—Hokkaido.

Gen. Distr.—Europe, Siberia, Japan.

J. N.: *Monki-samuraikomayu*.

#### 5. *Apanteles glomeratus* LINNÉ

*Ichneumon glomeratus* LINNÉ, Syst. Nat. Ed. 10a, I, p. 563 (1758).

*Microgaster reconditus* NEES, Hymen. Ichneum. affin. Monogr., I, p. 174, ♀ ♂, II, p. 400, ♀ ♂ (1834).

*Microgaster crataegi* RATZBURG, Ichneum. d. Forstinsect., I, p. 72 (1844), II, p. 52 (1848), III, p. 54 (1852).

*Apanteles glomeratus* REINHARD, Deutsch. ent. Zeitschr., xxiv, p. 364 (1880), xxv, p. 33, ♀ ♂ (1881); MARSHALL, Trans. Ent. Soc. London, p. 176, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 421, ♀ ♂ (1889); DALLA TORRE, Cat. Hymen., IV, p. 171 (1898); SZÉPLIGETI, Gen. Insect., p. 22-24, p. 107 (1904); LYLE, Entomologist, xlix, p. 228 (1916); MUESEBECK, Proc. U. S. Nat. Mus., lviii, p. 562 (1920); CHIKAMORI, Insect World, xxiv, p. 49 (1920); TAKAHASHI, Sosai Gaichu Kakuron, p. 32, Fig. 12 (1928); WILKINSON, Bull. Ent. Res., xix, p. 98, (1928); ISHII, Nippon Konchu Zukan, p. 377, Fig. 734 (1932).

*Apanteles aporiae* MATSUMURA (nec. ASHMEAD), Nippon-ekichu-mokuroku, p. 100 (1908); id., Konchu Bunruigaku, II, p. 270, pl. V, Fig. 3 (1915); OKAMOTO, Report Agr. Exp. St. Hokkaido, no. 20, p. 56, Pl. V, Fig. 5 (1921); MATSUMURA, 6000 Ill. Insect. Japan-Empire, p. 73, Fig. 398 (1931).



This is a cosmopolitan species, known as a parasite of *Pierid*-larvae.

Host—*Pieris rapae* L., *Aporia crataegi* L.

It is a well-known parasite of *Pieris rapae* L. in Japan, and it is also parasitic in the larva of *Aporia crataegi* L. in Hokkaido.

Cocoon—Sulphur-yellow, clustered together indiscriminately, connected by a slight web. It is often found in the cabbage-gardens, attached to the cabbage-leaves, and in spring large masses of this cocoon are found attached to the leaves and twigs of the cheery- and apple-trees.

Loc. Distr.—Whole Japan.

Gen. Distr.—Europe, Japan, U. S. A., Canada, India.

J. N.: *Aomushi-samuraimayu*.

## 6. *Apanteles suzumei* nov. sp.

♀. Black; antennae dark brown; legs reddish yellow, all coxae black, upper trochanters of four posterior and the hind femora at the apices fuscous; basal two tergites narrowly margined with yellow. Wings hyaline; stigma and veins fuscous; tegulae black.

Head smooth and shining; occiput on each side punctate; antennae as long as the body. Mesonotum closely punctate; disc of the scutellum smooth and shining; mesopleurae punctate, being not so strongly as in the mesonotum, with a large smooth area at the middle; propodeum coarsely reticulate-rugose, lacking a median longitudinal carina. First abscissa of the radius as long as  $\frac{1}{2}$  breadth of the stigma and nearly equal to the intercubital nervure; recurrent nervure and the pigmented portion of the 2nd cubitus nearly equal in length, a little longer than the apical portion of the 1st cubitus. Hind coxae strongly punctate on the outside of the base; hind tibial spurs subequal, shorter than  $\frac{1}{2}$  of the metatarsus. First tergite gradually broadened from the base to the apex, as long as broad at the apex, deeply excavated at the base, being striate-rugose on the apical half; 2nd tergite shorter than the 3rd, with two impressed oblique lines, the area between the lines as rugose as in the 1st, the rest smooth and shining; tergites 2.-6. shallowly grooved longitudinally at the middle; ovipositor short, the sheaths as long as the hind tibial spurs.

Length 2.5 mm.

Host—*Smerinthus planus* Wk.

A large number of this cocoon was reared from the larva of *Smerinthus planus* Wk. in October, 1930, and the imago issued from this cocoon in May of the next year at the college-insectarium. It was also bred from a *Splungid*-larva by Dr. S. KUWAYAMA, in June, 1932, at Sapporo.

Cocoon—White, tinged with flesh-colour, gregarious with no external

covering; more than 100 individuals issuing from a single host, clustered together by some loose silk, and placed on the host-body (Pl. II, Fig. 2).

Habitat—Hokkaido (Sapporo).

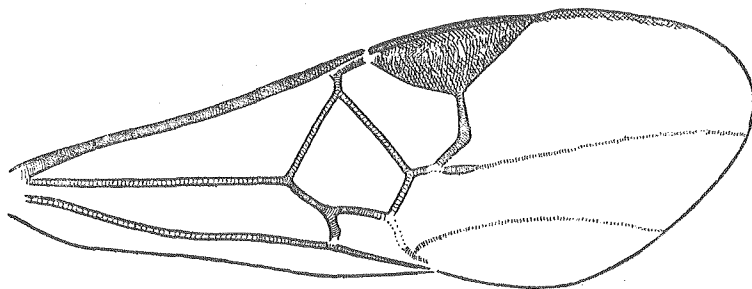
J. N.: *Suzume-samuraikomayu*.

This species closely resembles *Apanteles difficilis* NEES, a European species, but differs from it in the colour of the hind femora which are reddish yellow.

**7. *Apanteles tatehae* nov. sp.**

♀. Black; mandibles, legs, and belly at the base reddish yellow; coxae and upper trochanteres black; antennae dark brown, the two basal joints black; palpi and tibial spurs pale. Wing subhyaline, stigma and veins yellowish brown, tegulae black.

Head smooth and shining; occiput on each side, and genae punctate; face with a median longitudinal carina; antennae as long as the body. Mesonotum shallowly and coalescently punctate; disc of the scutellum and the mesopleurae smooth and shining, with some punctures under the tegulae; propodeum coarsely reticulate-rugose, with an indistinct median longitudinal carina. First abscissa of the radius as long as  $\frac{3}{4}$  breadth of the stigma, and a little shorter than the intercubital nervure; recurrent nervure and the pigmented portion of the 2nd cubitus nearly equal, just longer than the apical portion of



**Fig. 1**

Fore Wing of *Apanteles tatehae* nov. sp. (♀)

the 1st cubitus. Hind coxae smooth and shining, finely punctate at the outside of the base; hind tibial spurs subequal, a little shorter than  $\frac{1}{2}$  of the metatarsus. First tergite about  $1\frac{1}{2}$  times as long as broad, with the sides parallel throughout, excavated at the base, being reticulate-rugose on the apical half, closer than on the propodeum; 2nd tergite shorter than the 3rd with two oblique impressed lines, being smooth and shining, except along the lines which

are rugose; 3rd and following tergites smooth and shining; ovipositor sub-exserted, the sheaths nearly equal to the hind metatarsus.

Length 2.5 mm.

♂. Closely resembles the female, but differs from it in having the antennae longer than the body, and the belly almost black.

Host—*Pyrameis cardui* L., *Vanessa canace* L.

Many specimens are preserved in our Museum, bred from the larva of *Pyrameis cardui* L. by Dr. S. YAGI, on the 14th of July, 1916, at Kurashiki and from the larva of *Vanessa canace* L. by the writer, on the 23rd of July, 1932, at Shizuoka.

Cocoon—Pure white, gregarious, arranged regularly like the cells of honeycomb, enveloped within a white cottony web, being attached to the leaf of the food-plant under the dead host-larva.

Habitat—Honshu (Kurashiki, Shizuoka).

J. N.: *Tateha-samurai komayu*.

This species is very closely allied to *Apanteles vanessae* REINHARD, a European species, but differs from the latter in having the 2nd tergite smooth, and the upper trochanters black.

## 8. *Apanteles taprobanae* CAMERON

*Apanteles taprobanae* CAMERON, Men. Proc. Manch. Phil. Soc., xli, p. 38 (1897); WILKINSON, Bull. Ent. Res., xix, p. 100, ♀ ♂ (1928).

*Apanteles (Proapanteles) stauropi* VIERECK, Proc. U. S. Nat. Mus., xlii, p. 146, ♀ (1912).

*Apanteles (Proapanteles) formosanae* VIERECK, Proc. U. S. Nat. Mus., xliv, p. 642, ♀ ♂ (1913).

I have never seen this species, but according to WILKINSON, *Apanteles stauropi* VIERECK and *Apanteles formosanae* VIERECK are all synonymous.

Host—*Stauropus alternus* Wk.

It is recorded as a parasite of *Stauropus alternus* Wk. by VIERECK and WILKINSON in Bangalore, Mysore, India, and Java.

Cocoon—White, clustered indiscriminately together on the twigs of the food-plant (after WILKINSON).

Loc. Distr.—Formosa.

Gen. Distr.—Bangalore, Mysore, India, Java, Ceylon, Formosa.

J. N.: *Taiwan-shachihoko-samurai komayu*.

## 9. *Apanteles flavipes* CAMERON

*Cotesia flavipes* CAMERON, Men. Proc. Manch. Phil. Soc., iv, p. 185, ♂ (1891).

*Apanteles nonagriæ* OLLIFF, Agric. Gaz. N. S. Wales, iv, p. 381 (1893); WILKINSON, Bull. Ent. Res., xix, p. 136 (1928).

*Apanteles flavipes* SZÉPLIGETI, Gen. Insect., 22-24, p. 109 (1904); WILKINSON, Bull. Ent. Res.,

xix, p. 93, ♀ ♂, Fig. 2 e (1928); WATANABE, Trans. Sapporo Nat. Hist. Soc., xii, p. 68 (1932).

*Apanteles (Stenopleura) nonagriæ* VIERECK (non OLLIFF), Proc. U. S. Nat. Mus., xliv, p. 645, ♀ ♂ (1913).

*Apanteles (Stenopleura) simplicis* VIERECK, Proc. U. S. Nat. Mus., xlv, p. 645, ♀ ♂ (1913); Nawa, Insect World, xix, p. 456 (1915).

*Apanteles flavatus* ISHIDA, Kansho Meichu Chosa Hokoku, I, p. 97, ♀ ♂, II, Pl. XIV, Fig. 1-8, (1915).

Host—*Chilo simplex* BUTL., *Chilo infuscatellus* SNELL., *Schoenobius incertellus* WK., *Diatraea venosata* WK., and *Sesamia inferens* WK.

Above listed host-species were recorded by VIERECK, ISHIDA, and the writer from Formosa, and only the first host from Japan.

Cocoon—White, gregarious, clustered indiscriminately together, surrounded by some loose silk, and attached to the leaves and stems of the rice-plant and sugar-cane.

Loc. Distr.—Honshu (Gifu), Kiushu (Nagasaki), Formosa.

Gen. Distr.—India, Australia, Formosa, Japan.

J. N.: *Zuimushi-samuraikomayu*.

#### 9a. *Apanteles flavipes* CAMELON f. *chilonis* MUNAKATA

*Apanteles chilonis* MUNAKATA, Extra Report. Agr. Exp. St., Aomori, no. 2, p. 69, ♂ ♀, Pl. II, Fig. 5, in June (1912).

*Apanteles (Stenopleura) chilocida* VIERECK, Proc. U. S. Nat. Mus., xliii, p. 582, ♀ ♂, in December (1912); NAWA, Insect World, xix, p. 455 (1915); WILKINSON, Bull. Ent. Res., xix, p. 94 (1928).

*Apanteles flavipes* CAMERON f. *chilonis* WATANABE, Trans. Sapporo Nat. Hist. Soc., xii, p. 69, ♀ ♂ (1912).

Only differs from the typical specimen in having the hind coxae black.

Host—*Chilo simplex* BUTL.

Cocoon—Similar to that of the typical species.

Loc. Distr.—Honshu (Aomori, Gifu), Kiushu (Nagasaki).

Gen. Distr.—Japan.

#### 10. *Apanteles planus* nov. sp.

♀. Black; antennae, legs, belly, and the lateral margins of the tergites 1.-3, reddish yellow; hind coxae fuscous at the bases; palpi and tibial spurs pale. Wings hyaline, stigma yellowish brown, veins pale, tegulae brownish yellow.

Head almost smooth and shining, on each side of the occiput finely punctate; antennae a little shorter than the body. Mesonotum strongly punctate; disc of the scutellum, and the mesopleurae smooth and shining, only under the tegulae punctate; propodeum reticulate-rugose, with a short median carina at the apex, sending two oblique carinae on each side. First abscissa of the radius, recurrent nervure, and 2nd intercubital nervure all, equal in length, shorter

than the breadth of stigma; apical portion of the 1st cubitus as long as the pigmented portion of the 2nd cubitus, both of which are shorter than the recurrent nervure. Hind coxae smooth and shining; hind tibial spurs subequal, a little shorter than  $\frac{1}{2}$  of the metatarsus. First tergite about  $1\frac{1}{2}$  times longer than broad at the apex, reticulate-rugose, and excavated at the base; 2nd tergite on the middle as rugose as the 1st, with a smooth median obtuse carina, lacking impressed lines, on the lateral margins being smooth; 3rd and following tergites smooth and shining; ovipositor shorter, the sheaths as long as the hind tibial spurs.

Length 2.5 mm.

♂. Closely resembles the female, but differs from it in having the antennae longer than the body, the belly only at the base reddish yellow, the hind coxae being more blackish.

Length 2 mm.

Host—*Smerinthus planus* Wk.

This species was bred from the larva of *Smerinthus planus* Wk., on the 21st of August, 1929, at our collage-insectarium.

Cocoon—Pure white, gregarious, clustered together by loose silk with no external covering; more than 100 individuals issuing from a single host-larva. This cocoon closely resembles that of *Apanteles suzumai*, but easily distinguished from the latter by the white colour, being not tinged with flesh-colour.

Habitat—Hokkaido (Sapporo).

J. N: *Uchisuzume-samuraikomayu*.

This species is closely allied to *Apanteles analis* NEES, a European species, but differs from it in having the disc of the scutellum smooth and shining.

# **11. *Apanteles miyoshii* nov. nom.**

*Apanteles smerinths* MIYOSHI (non RIELY and OKAMOTO), Insect World, xxvii, p. 86 with Fig. (1923).

As a supplement to the original description, the following points may be added:

♀. Black; mouth-parts, legs, abdomen yellowish red; hind coxae and two basal tergites being fuscous; antennae yellowish brown; palpi and tibial spurs pale. Wings hyaline, stigma and tegulae brown, veins yellow.

Head shining with some scattered punctures; occiput on each side strongly punctate-rugose; antennae as long as the body. Mesonotum shallowly and coalescently punctate; disc of the scutellum almost shining, with a few punctures; meso- and metapleurae smooth and shining, scattering some punctures beneath the tegulae; propodeum strongly reticulate-rugose, with a longitudinal

median carina. Intercubital nervure, breadth of the stigma, and recurrent nervure, all equal in length and shorter than  $\frac{1}{2}$  of the 1st abscissa of the radius; pigmented portion of the 2nd cubitus a little shorter than the apical portion of the 1st cubitus. Hind coxae strongly punctate at the outside of base; the longer hind tibial spur nearly equal to, the shorter spur a little shorter than  $\frac{1}{2}$  of the metatarsus. First tergite (Fig. 2, a) as long as broad at the apex, with the sides rounded, deeply excavated at the base, being strongly reticulate-rugose on the apical half and in the excavation; 2nd tergite and the 3rd at the base as rugose as the 1st, with a smooth median area at the bases, the rest smooth and shining; ovipositor short, the sheaths shorter than the hind tibial spurs.

Length 3 mm.

♂. Agrees with the female, but differs from the latter in having the antennae longer than the body, being more yellowish.

Length 3 mm.

Host—*Marumba gaschkewitschi* BREM. et GREY.

The life-history of this species was recorded by K. MIYOSHI, according to him, it was parasitic in the larva of *Marumba gaschkewitschi* BREM. et GREY. A large number of this species and two masses of the cocoon are preserved in this Museum, bred from the same host by Dr. S. YAGI, on the 23th of June, 1916, at Kurashiki.

Cocoon (Pl. II, Fig. 5)—Pure white, gregarious, clustered together, attached to the leaf in a large white cottony mass like that of *Apanteles australiensis* ASHMEAD (WILKINSON, Bull. Ent. Res., xxi, p. 485, Pl. XXI, 1930).

Loc. Distr.—Honshu (Kurashiki).

Gen. Distr.—Japan.

J. N.: *Momosuzume-samurai-komayu*.

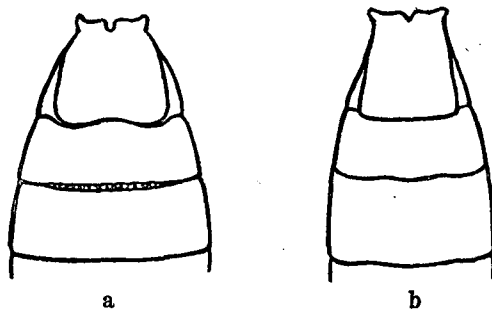


Fig. 2

a. Tergites 1.-3. of *Apanteles miyoshii*  
nov. nom. (♀)

b. Tergites 1.-3. of *Apanteles okamotoi*  
nov. nom. (♀)

## 12. *Apanteles okamotoi*

nov. nom.

*Apanteles smerinthis* OKAMOTO (non RIELY, and MIYOSHI), Report Agr. Exp. St., Hokkaido, no. 20, p. 53, Pl. V, Fig. 4 (1921).

Very similar to the preceding, but differs from it in the following points: 1) Tergites 2.-4. reddish yellow, the rest being fuscous. 2) Hind coxae only at the base fuscous. 3) Mesonotum punctate, but being shallower than in the

preceding. 4) Propodeum reticulate-rugose with 3 oblique carinae on each basal side. 5) First tergite (Fig. 2, b) gradually narrowed and a little longer than broad at the apex. 6) Intercubital nervure shorter than the breadth of the stigma, which is a little longer than the recurrent nervure.

Length 3 mm.

♂. Unknown.

Host—*Dicranura vinula* L.

According to OKAMOTO it is a parasite of the larvae of *Dicranura vinula* L., and 3 female specimens are preserved in this Museum, bred from the same host, on the 20th of July, 1920, at the Agricultural Experiment Station, Hokkaido.

Cocoon—Unknown.

Loc. Distr.—Hokkaido (Sapporo).

Gen. Distr.—Japan.

N. J.: *Okamoto-samuraikomayu*.

### 13. *Apanteles gastropachae* BOUCHÉ

*Microgaster gastropachae* BOUCHÉ, Naturg. d. Insect., p. 157 (1834); RATZBURG, Ichneum. d. Forstinsect., I, p. 72 (1844).

This species much resembles *Apanteles rubripes* HALIDAY, and some authors have treated it as the same species, but as far as my investigations go, it may be separated from the latter on the following points:

1) Four anterior coxae reddish yellow to fuscous, not being black. 2) Propodeum with a median longitudinal carina. 3) The longer hind tibial spur nearly equal to, the shorter spur a little shorter than  $\frac{1}{2}$  of the metatarsus. 4) Hind tibiae on the basal third and the tarsi fuscous. 5) 3rd tergite sometimes on the basal half as rugose as in the 2nd.

Host—*Malacosoma neustria* L.

According to RATZBURG it is a parasite of the larva of *Malacosoma neustria* L. in Europe, and I have received many specimens, bred from the same host by Mr. I. HAYASHI at Kyoto.

Cocoon—White, tinged with lemon-yellow, being lighter in colour than that of *Apanteles glomeratus* L., being clustered together in a mass.

Loc. Distr.—Honshu (Kyoto).

Gen. Distr.—Europe, Japan.

J. N.: *Obikareha-samuraikomayu*.

### 14. *Apanteles affinis* NEES

*Microgaster affinis* NEES, Hymen. Ichneum. affin. Monogr., I, p. 176 (1834).

*Microgaster vinulae* NEES, Hymen. Ichneum. affin. Monogr., II, p. 401 (1834); RATZBURG, Ich-

neum. d. Forstinsect., I, p. 72 (1844), II, p. 52 (1848), III, p. 54 (1852).

*Apanteles affinis* REINHARD, Deutsch. ent. Zeitschr., xxiv, p. 363 & 370, ♀ ♂ (1880); MARSHALL, Spec. Hymén. Europe, IV, p. 418, ♀ ♂ (1889).

*Microgaster (Apanteles) affinis* THOMSON, Opusc. ent., p. 2260 (1895).

Host—*Dicranura vinula* L.

This species is known as a parasite of the larva of *Dicranura vinula* L. in Europe, and it was bred from the same host on the 16th of July, 1914, at this collage-insectarium.

Cocoon (Pl. II, Fig. 7)—White, tinged with lemon-yellow, heaped irregularly together, surrounded by some loose silk, and attached to the leaf of the poplar-tree.

Loc. Distr.—Hokkaido (Sapporo).

Gen. Distr.—Europe, Japan.

J. N.: *Mokume-samuraikomayu*.

### 15. *Apanteles femoratus* ASHMEAD

*Glyptapanteles femoratus* ASHMEAD, Proc. U. S. Nat. Mus., xxx, p. 186, ♂ (1906); MATSUMURA, Nippon-ekichu-mokuroku, p. 96 (1908).

♀. Closely resembles the male, but the following points may be added: Antennae as long as the body. Mesonotum shallowly and coalescently punctate; disc of the scutellum with some scattered punctures; propodeum smooth and shining. First abscissa of the radius not angled with the intercubital nerve. Hind coxae finely punctate, shining; the longer hind tibial spur as long as  $\frac{1}{2}$  of the metatarsus, the shorter spur about  $\frac{1}{3}$  of the metatarsus. Abdomen (Fig. 3, a) smooth and shining; 1st tergite about twice as long as broad at the middle; 2nd tergite somewhat shorter than the 3rd, with two oblique impressed lines, enclosing a smooth subtriangular space; ovipositor short, the sheaths as long as the hind metatarsus.

Length 2.5 mm.

Host—*Porthesia similis* Fuess.

This species was bred from the larva of *Porthesia similis* Fuess. by Mr. S. SASAKI on the 10th of August, 1932, at Sapporo.

Cocoon—Pure white, surrounded by a small amount of some loose silk, gregarious, being found in the cocoon of the host.

Loc. Distr.—Hokkaido (Sapporo), Honshu (Gifu after ASHMEAD).

Gen. Distr.—Japan.

J. N.: *Tsumaki-samuraikomayu*.

### 16. *Apanteles bicolor* NEES

*Microgaster bicolor* NEES, Hymen. Ichneum. affin. Monogr., I, p. 181, ♀ ♂ (1834); RATZBURG,



Ichneum. d. Forstinsect. II, p. 50, ♀ ♂ (1848), III, p. 51 (1852).

*Microgaster circumscriptus* NEES, Hymen. Ichneum. affin. Monogr., I, p. 181 (1834), II, p. 403 (1834).

*Apanteles bicolor* REINHARD, Deutsch. ent. Zeitschr., xxiv, p. 366 (1880), xxv, p. 48, ♀ ♂ (1881); MARSHALL, Trans. Ent. Soc. London, p. 216, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 480, ♀ ♂ (1889); DALLA TORRE, Cat. Hymen., IV, p. 164 (1895); SZÉPLIGETI, Gen. Insect., 22-24, p. 105 (1904); LYLE, Entomologist, I, p. 196 (1917); FAHRINGER, Arkiv. för Zool., Bd. 21, A, p. 11 (1929).

*Microgaster (Apanteles) circumscriptus* THOMSON, Opusc. ent., p. 2271, ♀ ♂ (1895).

Host—*Orgyia thyellina* BUTL., *Porthesia similis* FUESS.

This species is known in Europe as a parasite of the larvae of several microlepidopterous insects and of a *Noctuid*, *Mamestra persicarinæ* L., and it was bred from the larvae of *Orgyia thyellina* BUTL., on the 13th of August, 1924, at this collage-insectarium, and from the larva of *Porthesia similis* FUESS. by Mr. S. SASAKI on the 3rd of October, 1932, at Sapporo.

Cocoon—Silvery white, gregarious, irregularly clustered together, and attached to the leaves of the food-plant.

Loc. Distr.—Hokkaido (Sapporo).

Gen. Distr.—Europe, West-Asia, Siberia, China, Japan.

J. N.: *Kibara-samuraiikomayu*.

## 17. *Apanteles liparidis* BOUCHÉ

*Microgaster liparidis* BOUCHÉ, Naturg. d. Insect, p. 152 (1834); NEES, Hymen. Ichneum. affin. Monogr., II, p. 403 (1834); RATZBURG, Ichneum. d. Forstinsect., I, p. 70 (1844), II, p. 50 (1848), III, p. 51 (1852).

*Apanteles liparidis* MARSHALL, Spec. Hymén. Europe, IV, p. 491, (1889); Dalla Torre, Cat. Hymen. IV, p. 176, (1895); SZÉPLIGETI, Gen. Insect., 22-24, p. 107 (1904); BURGESS et CROSSMAN, Tech. Bull., no. 56, U. S. Dept. Agr., Washing., p. 95, Fig. 40-41 (1929); ISHII, Nip. Kon. Zukan, p. 377, Fig. 735 (1932).

*Glyptaanteles japonicus* ASHMEAD, Proc. U. S. Nat. Mus., xxx, p. 193, ♀ ♂ (1906); MATSUMURA, Nippon-ekichu-mokuroku, p. 96 (1908); OKAMOTO, Report Agr. Exp. St., Hokkaido, no. 20, p. 39, ♀ ♂, Pl. V, Fig. 2 (1915); MATSUMURA, 6000 Ill. Insect. Japan-Empire, p. 74, Fig. 404 (1931).

*Apanteles fulvipes* HOWARD et FISKE, Bureau Entom. Bull. U. S. Dept. Agr. Washing., p. 193, Fig. 31-33 (1911); KAMIYA, Ringyo Shikenjo Hokoku, no. 12, p. 1 (1931).

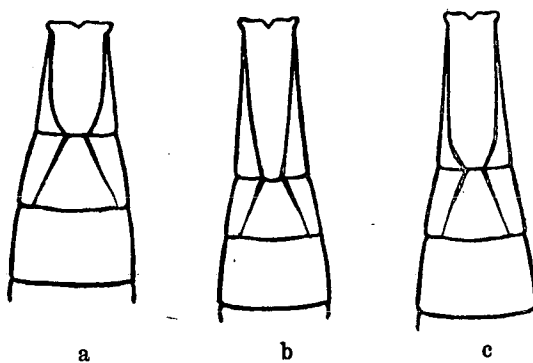


Fig. 3

- a. Tergites 1.-3. of *Apanteles femoratus* ASHMEAD (♀)
- b. Tergites 1.-3. of *Apanteles fulvipes* HALIDAY (♀)
- c. Tergites 1.-3. of *Apanteles liparidis* BOUCHÉ (♀)

*Glyptapanteles fulvipes* VUILLET, Bull. Soc. Entom. Sc. et Medic. Ouest, xix, p. 10 (1910); KOJIMA et MORI, Insect World, xv, p. 280 (1911).

*Apanteles (Apanteles) posticae* SONAN, Report Agr. Exp. St., Formosa, no. 29, p. 111, ♀ ♂, Fig. 6 (1927).

*Apanteles japonicus* MATSUMURA, Ill. Com. Insect. Japan, IV, p. 31 & 43, Pl. VIII, Fig. 8 (1932).

After studying a rich material of this species I am convinced that in the original description of *Glyptapanteles japonicus* ASHMEAD "The 2nd tergite of the male about twice as long as the 3rd" is probably a mistake, and both of which are really subequal in length. *Glyptapanteles japonicus* ASHMEAD and *Apanteles posticae* SONAN are all synonymous. Further according to BURGESS and CROSSMAN the *Braconid* parasite of the Gypsy-moth-caterpillar (*Lymantria dispar* L.), which was imported from Europe and Japan into U. S. A. and identified as *Apanteles fulvipes* HALIDAY, is *Apanteles liparidis* BOUCHÉ.

Host—*Lymantria dispar* L., *Dendrolimus spectabilis* BUTL., *Dendrolimus albolineatus* MATS. and *Orgyia postica* WK.

This species is known in Europe as a parasite of the larvae of *Lymantria dispar* L. and of *Dendrolimus pini* L., and in Japan it is recorded by many entomologists as a parasite of *Lymantria dispar* L. and *Dendrolimus spectabilis* BUTL. It was also bred from the larva of *Orgyia postica* WK. by J. SONAN in Formosa.

A large number of specimens is preserved in this Museum, and their localities and their hosts are as follows:

- 1) *Dendrolimus albolineatus* MATS.  
Kuriles (23/VII, 1922, T. AIZAWA).
- 2) *Dendrolimus spectabilis* BUTL.  
Honshu (Tokyo, IV, 1929, K. KAMIYA).
- 3) *Lymantria dispar* L.  
Hokkaido (Sopporo, 25/V, 1918; 28/VII 1929), Honshu (Niigata, 2/VII, 1915, T. ISHIKAWA; Tokyo, VI, 1929, K. KAMIYA; Kyoto, 1930, I. HAYASHI).
- 4) *Orgyia postica* WK.  
Formosa (Taihoku, 10/III, 1928, J. SONAN).

Cocoon—Pure white, more woolly than that of *Apanteles fulvipes* HAL., irregularly clustered together, attached to the tree-trunks and leaves. The host-larva is often found particularly entangled above the mass of cocoon.

Loc. Distr.—Kuriles, Hokkaido, Honshu, Kiushu, Formosa.

Gen. Distr.—Europe, Siberia, U. S. A., Japan.

J. N.: *Buranko-samuraikomayu*.

**18. *Apanteles fulvipes* HALIDAY**

*Microgaster fulvipes* HALIDAY, Ent. Magaz., II, p. 249, ♀ ♂ (1834).

*Microgaster glomeratus* NEES, Hymen. Ichneum. affin. Monogr., I, p. 179, II, p. 403 (1834).

*Microgaster nemorum* RATZBURG, Ichneum. d. Forstinsect., I, p. 69 (1844), II, p. 50, T. 7, Fig. 14 (1848), III, p. 51 (1852).

*Apanteles fulvipes* REINHARD, Deutsch. ent. Zeitschr., xxiv, p. 366 (1844), xxv, p. 51, ♀ ♂ (1881); MARSHALL, Trans. Ent. Soc. London, p. 223, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 486, ♀ ♂ (1889); DALLA TORRE, Cat. Hymen., IV, p. 170 (1898); SZÉPLIGETI, Gen. Insect, 22-24, p. 106 (1904); LYLE, Entomologist, Vol. 50, p. 200 (1917).

*Microgaster (Apanteles) fulvipes* THOMSON, Opusc. ent., p. 2273 (1895).

Host—*Cosmotriche potatoria* L., *Melalopha anastomosis* L.

This is one of the most common species in Europe, known as a parasite of more than twenty different species of lepidopterous insects. It was bred from the larva of *Melalopha anastomosis* L. by Dr. S. MATSUMURA, on the 4th of September, 1920, at Sapporo, and from the larva of *Cosmotriche potatoria* L., on the 16th of June, 1931, at this college-insectarium. Two female specimens were collected by Dr. S. ISSIKI, on the 29th of July, 1914, at Toyohara in Saghalien.

Cocoon (Pl. II, Fig. 4)—Pure white, gregarious, and usually attached to the outsides of the host-body.

Loc. Distr.—Saghalien, Hokkaido.

Gen. Distr.—Europe, Japan.

J. N.: *Kiashi-samuraikomayu*.

**19. *Apanteles lamborini* WILKINSON**

*Apanteles lamborini* WILKINSON, Bull. Ent. Res., xix, p. 90, ♀ ♂ (1928).

Host—*Histia rhodope* CRAM.

This species was bred from the larva of *Histia rhodope* CRAM., on the 28th of April, 1927, by Mr. J. SONAN at Taihoku.

Cocoon—Unknown.

Loc. Distr.—Formosa (Taihoku).

Gen. Distr.—Federated Malay States, Formosa.

J. N.: *Kurotsubame-samuraikomayu*.

**20. *Apanteles sasakii* nov. sp.**

♀. Black; legs reddish yellow; all coxae black; upper trochanters, femora on each end, hind tibiae at the apex, and hind tarsi fuscous; palpi and the tibial spurs yellow. Wings hyaline; stigma and veins brownish yellow; tegulae black.

Head smooth and shining; antennae shorter than the body, the 1st joint of the flagellum shorter than the 2nd. Mesonotum strongly punctate; disc of

the scutellum shining, with some scattered punctures; mesopleurae smooth and shining, only punctate under the tegulae; propodeum coarsely reticulate-rugose, with a longitudinal median carina. First abscissa of the radius a little shorter than the breadth of the stigma and as long as the recurrent nervure or the intertubital nervure; apical portion of the 1st cubitus just shorter than the pigmented portion of the 2nd cubitus. Hind coxae smooth and shining; hind tibial spurs subequal, as long as  $\frac{1}{3}$  of the metatarsus. First tergite longer than broad, with the sides parallel throughout, deeply excavated at the base, being

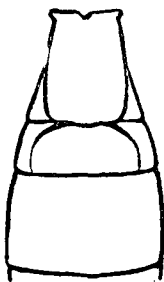


Fig. 4

Tergites 1.-3. of  
*Apanteles sasakii*  
nov. sp. (♀)

reticulate-rugose; 2nd tergite shorter than  $\frac{1}{2}$  length of the 3rd, being as rugose as the 1st on the middle and laterally smooth; 3rd and following tergites smooth and shining; ovipositors exerted, the sheaths as long as the hind metatarsus.

Length 2.5 mm.

♂. Closely allied to the female, but differs from the latter in having the antennae longer than the body; trochanters and femora almost fuscous, tinged with brown at the apices of the latter; tibiae and tarsi in the hind legs fuscous.

Length 2.3-2.5 mm.

Host—*Chamaepora rumicis* L.

This species was bred from the larva of *Chamaepora rumicis* L. by Mr. S. SASAKI, on the 17th of September, 1932, at Sapporo.

Cocoon (Pl. II, Fig. 6)—White, hardly tinged with yellow, enveloped in a cottony ball, like that of *Apanteles congestus*, but white, being less regularly formed.

Habitat—Hokkaido (Sapporo).

J. N.: *Nashikenmon-samuraikomayu*.

This species comes near to *Apanteles utlor* REINHARD, a European species, but easily be distinguished from the latter by the structure of the propodeum.

## 21. *Apanteles falcatus* NEES

*Microgaster falcatus* NEES, Hymen. Ichneum. affin. Monogr., I, p. 175, ♀ ♂ (1834).

*Apanteles falcatus* REINHARD, Deutsch. ent. Zeitschr., xxiv, p. 364 (1880), xxv, p. 37, ♀ ♂ (1881); MARSHALL, Trans. Ent. Soc. London, p. 192, ♀ ♂ (1885); id., Sepc. Hymén. Europe, IV, p. 442, ♂ ♀ (1889); DALLA TORRE, Cat. Hymen., IV, p. 169 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 106 (1904); FAHRINGER, Arkiv för Zool., Bd. 21 A. p. 11 (1929).

*Microgaster (Apanteles) falcatus* THOMSON, Opusc. ent., p. 2272, (1895).

This is a new record to the *Braconid*-fauna of Japan.

Host—Unknown in Japan.

This species is recorded in Europe as a parasite of *Hadena monoglyphia* HUFN.

Cocoon—White, regularly disposed side by side with no external covering (after MARSHALL).

Loc. Distr.—Saghalien (Shisuka, 6 ♀♀, 8/VIII, 1914; Tonnai, 1 ♀, 1/VIII, 1914; Otani, 2 ♀♀, 22/VIII, 1914; Otomari, 3 ♀♀, 28/VII, 1914; S. ISSIKI and T. ADACHI), Kuriles (Shana, 1 ♀, 31/VII, 1927, K. Doi).

Gen. Distr.—Europe, North-Africa, West-Asia, Siberia, Japan.

J. N.: *Karafuto-samurai-komayu*.

## 22. *Apanteles kuwayamai* nov. sp.

♀. Black; belly widely at the base, lateral margins of the basal 3 tergites, and legs reddish yellow; coxae at the bases, tibiae at the apices, and tarsal joints on each apical half being fuscous in the hind legs. Wings hyaline; stigma and veins yellow; tegulae brown.

Head smooth and shining; occiput rugose; antennae as long as the body. Mesonotum shallowly and coalescently punctate; disc of the scutellum, and mesopleurae smooth and shining; propodeum smooth and shining save some scattered punctures on the basal half, with areola only noticeable in the apical half. First abscissa of the radius in length nearly equal to  $\frac{1}{2}$  breadth of the stigma, which is a little shorter than the intercubital nervure or the recurrent nervure; apical portion of the 1st cubitus just longer than the pigmented portion of the 2nd cubitus. Hind coxae finely punctate, shining; hind tibial spurs subequal, about  $\frac{1}{3}$  of the metatarsus. Abdomen as long as head and thorax

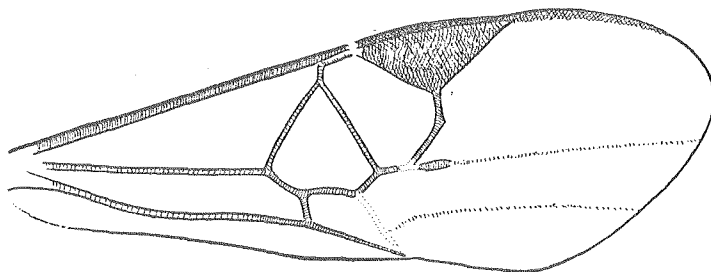


Fig. 5

Fore wing of *Apanteles kuwayamai* nov. sp. (♀)

taken together; 1st tergite at the base broader than at the apex,  $1\frac{1}{2}$  times as long as broad at the base, finely longitudinally striate, tumescent medially, with a strong longitudinal median carina which runs from the tumescence half way to the apex; 2nd tergite a little shorter than the 3rd, as rugose as the 1st on the lateral margins, with two impressed oblique lines, the rest smooth and

shining; ovipositor exerted, the sheaths as long as the hind metatarsus.

Length 2 mm.

♂. Similar to the female, but the antennae longer than the body.

Length 1.8 mm.

Host—*Lithocolletis*-sp.

This species was bred from the larva of a *Lithocolletis*-species by Dr. S. KUWAVAMA, in May, 1924, at Sapporo.

Cocoon—Pure white, solitary, fixed to the leaf of the food-plant, on the sides being drawn together by a few threads.

Habitate—Hokkaido (Sapporo).

J. N.: *Hosoga-samurai komayu*.

This species closely resembles *Apanteles umbellatarum* HALIDAY, a European species, but easily be distinguished from the latter by the structures of the propodeum and the two basal tergites.

### 23. *Apanteles sugae* nov. sp.

♀. Black; antennae, belly, two basal tergites on the lateral margins, and legs reddish yellow; coxae at the bases, tibiae at the apices, and tarsal joints at each apex fuscous in the hind legs; palpi and the tibial spurs pale. Wings hyaline; stigma and veins brown, the former with a pale spot at the inner angle; tegulae yellow. Abdomen commonly dark red.

Head finely punctate, dull; antennae shorter than the body. Mesonotum strongly punctate; disc of the scutellum, and mesopleurae smooth and shining, with some scattered punctures under the tegulae; propodeum rugosely punctate, the areola medially visible by being smoother and slightly excavated, apically with distinct carinae. First abscissa of the radius just shorter than the breadth of the stigma and a little longer than the intercubital nervure or the recurrent nervure; apical portion of the 1st cubitus nearly twice as long as the pigmented portion of the 2nd cubitus. Hind coxae punctate on the basal half, the longer hind tibial spur nearly  $\frac{1}{3}$ , the shorter spur nearly  $\frac{1}{4}$  length of the metatarsus. First tergite twice as long as broad at the apex, with the sides parallel throughout, medially tumescent, rugosely punctate; 2nd tergite as rugose as the 1st, a little shorter than the 3rd, the rest smooth and shining; ovipositor exerted, the sheaths as long as the hind femora.

♂. Agrees with the female, but differs from the latter in having the antennae longer than the body.

Length 2.3 mm.

Host—*Hyponomeuta evonymella* HÜB.

This species was bred from the larva of *Hyponomeuta evonymella* HÜB. by

Messrs. H. YAKU and K. IGARASHI, on the 17th of July, 1929, at this college-insectarium.

Cocoon—Pure white, gregarious, covered by a thin web. As the host-larva is enveloped in them, so they look like a larval case of the caddis-fly (*Trichoptera*).

Habitat—Hokkaido (Sapporo).

J. N.: *Suga-samurai komayu*.

This species resembles *Apanteles punctiger* WESMEAL rather than *Apanteles emarginatus* NEES and *Apanteles evonymelae* BOUCHÉ, both of which are the parasites of the same host in Europe, but it differs from *Apanteles punctiger* in the structures of the propodeum and the basal two tergites.

#### 24. *Apanteles hamakii* nov. sp.

♀. Black; antennae, mouth-parts and legs reddish yellow; all coxae black; palpi and the tibial spurs pale. Wings hyaline; stigma brown with a pale spot at each angle, the inner spot larger; veins pale; tegulae yellow.

Head smooth and shining; occiput on each side somewhat punctate; antennae stout, shorter than the body. Mesonotum shallowly and coalescently punctate; disc of the scutellum, and mesopleurae smooth and shining, with some scattered punctures under the tegulae; propodeum coarsely punctate, shining, the areola weakly defined, excavated and apically indicated by carinae. First abscissa of the radius shorter than the breadth of the stigma and longer than the intercubital nervure; apical portion of the 1st cubitus a little longer than the pigmented portion of the 2nd cubitus. First tergite about  $1\frac{1}{2}$  times as long as broad, with the side parallel throughout, excavated at the base, rugosely striate on the apical half, with some scattered punctures, and with a smooth median knob at the apex; 2nd as long as  $\frac{1}{2}$  of the 3rd; 2nd and following tergites smooth and shining; ovipositor exerted, the sheaths a little shorter than the hind tarsus.

Length 2.5 mm.

♂. Unknown.

Host—*Tortricid* sp.

This species was bred from the larva of a *Tortricid* species feeding on the leaves of *Salix koriyanagi* KIMURA, on the 6th of July, 1919, by an officer of Nagano Agricultural Experiment Station.

Cocoon—Silvery white, gregarious, arranged irregularly together upon the host-larva, not covered by web, being attached to the leaf of the food-plant.

Habitat—Honshu (Nagano).

J. N.: *Hamaki-samurai komayu*.

This species is closely allied to *Apanteles dilectus* HALIDAY, a European species, but differs from it in the length of the ovipositor and in the structure of the abdomen.

## 25. *Apanteles lacteicolor* VIERECK

*Apanteles* (*Apanteles*) *lacteicolor* VIERECK, Proc. U. S. Nat. Mus., xl, p. 475, ♀ ♂ (1911); HOWARD & FISKE, Bureau of Entom. Bull. no 91, U. S. Dept. Agr., Washing., p. 278, Fig. 67 (1911); MUESEBECK, Journ. Agr. Res., xl, p. 194, ♀ ♂, Pl. 20, Fig. A-E, Pl. 21, Fig. A-D (1913); id., Proc. U. S. Nat. Mus., xlviii, p. 520 (1920); SONAN, Rep. Agr. Exp. St., Formosa, no. 29, p. 46, ♀ ♂, Fig. 2 (1927); BURGESS et CROSSMAN, Tech. Bull. no 86, U. S. Dept. Agr., Washing., p. 120, Fig. 49 (1929).

*Apanteles conspersae* FISKE, Bureau of Entom. Bull. no. 91, U. S. Dept. Agr., Washing., p. 285, (1911).

Host—*Euproctis conspersa* BUTL.

This species was introduced from Europe into U. S. A. as a parasite of the Brown-tail-Moth (*Euproctis chrysorrhoea* L.), and according to American authors it is parasitic in some native lepidopterous larvae as *Acronycta lueata* GUENÉE, *Hyphantria textor* DRURY, etc. FISKE (Bureau of Ent. Bull. no. 91, U. S. Dept. Agr., Washing., p. 285) separated *Apanteles conspersae* FISKE, a parasite of *Euproctis conspersa* BUTL. in Japan, from this species by the biological standpoint, but the former is certainly a synonym of this species as SONAN (Rep. Agr. Exp. St., Formosa, no. 29, p. 49) treated.

I received three female specimens bred from the larva of *Euproctis conspersa* BUTL. by Mr. J. SONAN, on the 26th of July, 1920, at Shinten in Formosa.

Cocoon—Pure white, commonly solitary, surrounded by a small amount of loose silk, attached to the leaf of the food-plant. According to MUESEBECK, the cocoon of the winter-generation is found in the web of the host-larva. In the case of *Euproctis conspersa* BUTL., it is a gregarious parasite.

Loc. Distr.—Honshu (Yokkaichi after J. SONAN), Formosa (Shinten).

Gen. Distr.—Europe, Japan, Formosa, U. S. A.

J. N.: *Momokuro-samuraikomayu*.

## 26. *Apanteles sonani* nov. sp.

♀. Black; flagellum of the antennae fuscous; legs reddish yellow; all coxae black; trochanters, femora except at the apices, tibiae at the apices, and tarsi being fuscous; palpi and the tibial spurs pale. Wings hyaline; stigma brownish yellow; tegulae black.

Head shallowly and coalescently punctate; antennae as long as the body. Mesonotum and the disc of the scutellum strongly punctate, on each apical side of the latter with an unsculptured area; mesopleurae finely punctate, not so



strongly as in the mesonotum; propodeum coarsely punctate; areola and costulae strongly marked. First abscissa of the radius nearly equal to the breadth of the stigma and a little longer than the intercubital or the recurrent nervure; apical portion of the 1st cubitus about as long as the pigmented portion of the 2nd cubitus. Hind coxae finely punctate; hind tibial spurs subequal, a little shorter than  $\frac{1}{2}$  of the metatarsus. First tergite at the base narrower than at the apex,  $1\frac{1}{2}$  times as long as broad at the apex, medially tumescent, being somewhat rugose on the apical half, with a median longitudinal carina running from the tumescence half way to the apex; 2nd tergite about as long as  $\frac{2}{3}$  length of the 3rd; 2nd and following tergites smooth and shining; ovipositor exserted, the sheaths a little shorter than the hind metatarsus.

Length 2.5 mm.

♂. Unknown.

Host—*Chalcosia argentata* MOORE

I received two female specimens bred from the larva of *Chalcosia argentata* MOORE by Mr. J. SONAN, on the 9th of September, 1929, at Taihoku in Formosa.

Cocoon—Unknown.

Habitat—Formosa (Taihoku).

J. N.: *Sonan-samuraikomayu*.

This species closely allied to *Apanteles significans* WK. (Ann. Magz. Nat. Hist., v, p. 308, 1860), but easily be distinguished by the stigma which is entirely brown, being not hyaline.

## 27. *Apanteles igae* nov. sp.

♀. Black; antennae dark brown; mouth-parts, legs, and belly at the base reddish yellow; coxae, tibiae at the apices, and tarsal joints except at each apex fuscous; palpi and the tibial spurs pale. Wings hyaline; stigma and veins brown; tegulae yellow.

Head shallowly and coalescently punctate; antennae far shorter than the body, stout towards the apex. Mesonotum strongly punctate; disc of the scutellum almost smooth and shining, with a few scattered punctures; mesopleurae finely punctate; propodeum strongly reticulate-rugose; areola and costulae strongly marked, the former within and on each basal side striate and shining. First abscissa of the radius a little shorter than the breadth of stigma and longer than the intercubital nervure; apical portion of the 1st cubitus just longer than the pigmented portion of the 2nd cubitus. Hind coxae strongly reticulate-rugose;

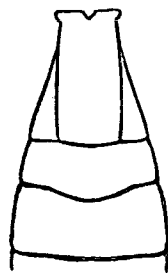


Fig. 6

Tergites 1.-3. of  
*Apanteles igae*  
nov. sp. (♀)

hind tibial spurs subequal, as long as  $\frac{1}{2}$  length of the metatarsus. First tergite at the apex broader than at the base, as long as broad at the apex, and longitudinally striate-rugose, with a smooth median knob at the apex; 2nd tergite very short, as long as  $\frac{1}{3}$  length of the 3rd, being as rugose as in the 1st, the rest smooth and shining; ovipositor exerted, the sheaths a little shorter than the hind tarsus.

Length 2.5 mm.

♂.—Unknown.

Host—*Tinea pellionella* L.

This species was bred from the larva of *Tinea pellionella* L. by Mr. T. ISOBE, on the 4th of September, 1915, at Tokyo.

Cocoon—Unknown.

Habitate—Honshu (Tokyo).

J. N.: *Iga-samurai komayu*.

This is allied to the next species, but easily be distinguished from it by the hind coxae which are reticulate-rugose.

## 28. *Apanteles heterusiae* WILKINSON

*Apanteles heterusiae* WILKINSON, Bull. Ent. Res., xix, p. 127, ♀ ♂ (1928).

Host—*Histia rhodope* CRAM.

I received six female specimens from Mr. J. SONAN, bred from the larva of *Histia rhodope* CRAM., on the 7th of November, 1920, at Taihoku in Formosa. According to WILKINSON it is a parasite of *Heterusia cingala* MOORE in Ceylon.

Cocoon—Unknown.

Loc. Distr.—Formosa (Taihoku).

Gen. Distr.—Ceylon, Formosa.

J. N.: *Hotaruga-samurai komayu*.

## 29. *Apanteles asotae* nov. sp.

♀. Black; belly, lateral margins of the basal three tergites, and legs reddish yellow; all coxae black; four posterior trochanters, hind tibiae on the basal third, and hind tarsi fuscous; palpi and the tibial spurs pale. Wings hyaline; stigma brown; tegulae black.

Head finely punctate; antennae as long as the body. Mesonotum strongly punctate; disc of the scutellum punctate, but not so strongly as in the mesonotum; mesopleurae smooth and shining, with some scattered punctures under the tegulae; propodeum smooth, unsculptured except the strong carinae of costulae and areola. First abscissa of the radius a little longer than the breadth of the stigma and twice as long as the intercubital nervure or the recurrent nervure;

apical portion of the 1st cubitus a little longer than the pigmented portion of the 2nd cubitus. Hind coxae impunctate; the longer hind tibial spur nearly equal to, the shorter spur shorter than  $\frac{1}{3}$  of the metatarsus. First tergite at the apex broader than at the base,  $1\frac{1}{2}$  times as long as broad at the apex, medially tumescent, and longitudinally striate-rugose; 2nd tergite as long as  $\frac{3}{4}$  length of the 3rd, being as rugose as in the 1st, the rest smooth and shining; ovipositor exerted, the sheaths nearly equal to the hind metatarsus.

Length 2.5 mm.

♂. Closely resembles the female, but differs from the latter in having the antennae longer than the body, and the belly fuscous.

Host—*Asota complana* Wk.

I received two female and four male specimens from Mr. J. SONAN, bred from the larva of *Asota complana* Wk., on the 24th of November, 1927, at Taihoku in Formosa.

Cocoon—Unknown.

Habitat—Formosa (Taihoku).

J. N.: *Hoshihitori-samurai komayu*.

This species much resembles *Apanteles expulsus* TURNER (Trans. Ent. Soc. London, p. 346, ♀ 1918), but may be distinguished from it by the sculpture of the scutellum and the structure of the tergites 2.-3.

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Species of *Apanteles* unknown to the writer

***Apanteles politus* ASHMEAD (non RIELY)**

*Glyptapanteles politus* ASHMEAD, Proc. U. S. Nat. Mus., xxx, p. 192, ♀ ♂ (1906); MATSUMURA, Nippon-ekichu-mokuroku, p. 96 (1908).

Loc. Distr.—Honshu (Gifu after ASHMEAD).

Host—Unknown.

***Apanteles minor* ASHMEAD**

*Glyptapanteles minor* ASHMEAD, Proc. U. S. Nat. Mus., xxx, p. 192, ♀ (1906); MATSUMURA, Nippon-ekichu-mokuroku, p. 96 (1908).

Loc. Distr.—Honshu (Gifu after ASHMEAD).

Host—Unknown.

***Apanteles nawai* ASHMEAD**

*Glyptapanteles nawaii* ASHMEAD, Proc. U. S. Nat. Mus., xxx, p. 193, ♀ ♂ (1906); MATSUMURA, Nippon-ekichu-mokuroku, p. 97 (1908).

Loc. Distr.—Honshu (Gifu after ASHMEAD).

Host—Unknown.

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" ... .. f. <i>chilonis</i> MUNAKATA ... ..	84
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<i>Schoenobius incertellus</i> WK. ... .. " ... ..	"
<b>Tortricidae</b>	
<i>Tortricid</i> sp. ... .. <i>A. hamakii</i> nov. sp. ... ..	95
<b>Gracilariidae</b>	
<i>Lithocolletis</i> sp. ... .. <i>A. kuwayamai</i> nov. sp. ... ..	93
<b>Tineidae</b>	
<i>Tinea pellionella</i> L. ... .. <i>A. igae</i> nov. sp. ... ..	97
<b>Hyponomeutidae</b>	
<i>Hyponomeuta evonymella</i> HÜB. ... .. <i>A. sugae</i> nov. sp. ... ..	94

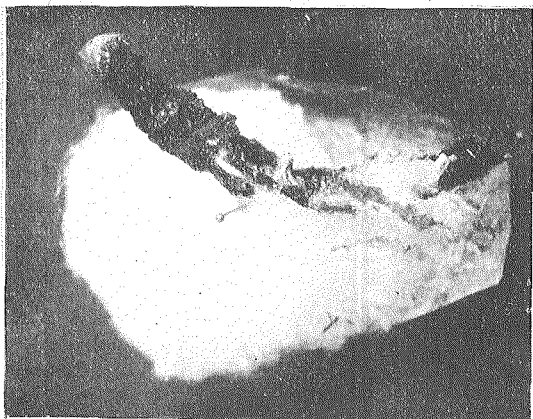
## 摘 要

本文には本邦産小繭蜂科中サムライコマユ属 (*Apanteles*) に隸する昆虫29種並びに1形 (10新種、8 未記録種を含む) を挙げたり。而してその大部分は宿主の判明せるものなり。

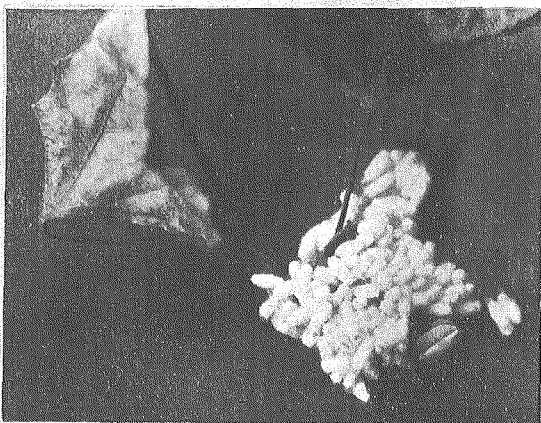
**Explanation of Plate II.**

1. Cocoon of *Apanteles miyoshii* WATANABE (nov. nom.),  
and the host-larva (*Marumba gaschkewitschi* BREM. et GREY)
2. Cocoon of *Apanteles suzumei* WATANABE (nov. sp.),  
and the host-larva (*Smerinthus planus* WK.)
3. Cocoon of *Apanteles ordinarius* RATZBURG,  
and the host-larva (*Dendrolimus spectabilis* BUTL.)
4. Cocoon of *Apanteles fulvipes* HALIDAY,  
and the host-larva (*Cosmotriche potatoria* L.)
5. Cocoon of *Apanteles congestus* NEES
6. Cocoon of *Apanteles sasakii* WATANABE (nov. sp.)
7. Cocoon of *Apanteles affinis* NEES

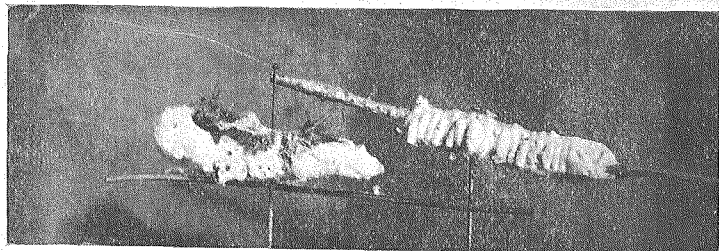
1



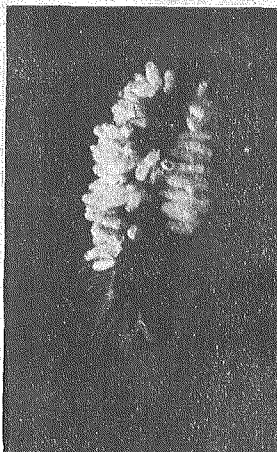
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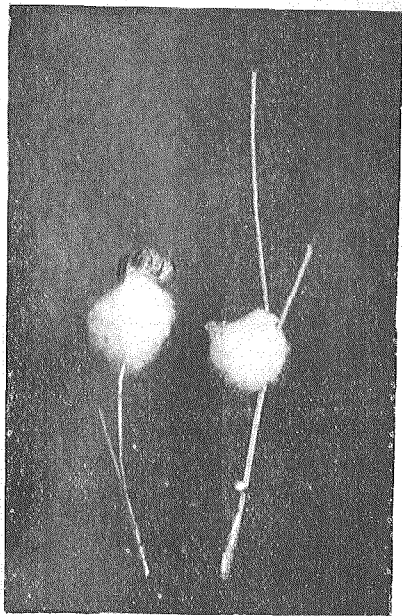
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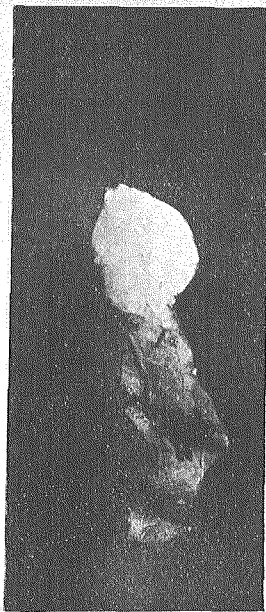
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5



6



7

